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To Commemorate William Hunting

AS announced on another page, it has been decided to create annual William Hunting awards for the best clinical papers published in THE RECORD each calendar year. By so doing it is hoped to attract to these pages a larger proportion of articles directly of interest to readers in private practice. Hunting himself appealed frequently for such material, which he regarded as being vital to his then new journal. In its very first number he wrote: "firmly believing that the science of medicine derives even more benefit from the inductive than the deductive method, we shall spare no effort in the attempt to extract from practitioners clinical reports of all their most interesting and instructive cases. . . . By recording his observations he (the practitioner) adds to the knowledge of his profession." Sixty-seven years have passed, but the value, and interest, of good clinical papers is as great to-day as ever.

It is to be hoped—indeed it may safely be asssumed—that the linking of the name of the founder and first editor of the journal with these awards will give general satisfaction. The naming of prizes after great veterinary figures gives to them an added value and confers a particular honour upon their recipients. In a profession which has had its full share of distinguished men Hunting's name must always stand high. Not only was he a most notable veterinarian, but a man of stature and personality. It is necessary to do no more than read some of his articles to appreciate the ideals for which he strove and to observe the outspoken language in which he castigated what he felt were mistaken policies or wrong conduct. Within the limited sphere of scientific and professional journalism he ranks as a great editor and in him THE RECORD found its John Walter.

As for the awards themselves, it will be noted that one is open to all veterinarians in private clinical practice, while the other is confined to young workers, less than five years qualified. It is hoped that this will encourage papers from those who might otherwise withdraw from competition with men of mature experience. In any case the comparatively newly qualified should have the advantage of a fresh eye, together with a critical and enquiring approach to clinical problems. It may be observed, in this connection, that teachers, principals and others sometimes lend the weight of their names to papers which record work in which younger colleagues have played, perhaps, a major part. So far as the Hunting awards are concerned—and of course in this context only—this would have the effect of disqualifying the report of a piece of work. Those who wish, so to speak, to further Mr. Pickwick's early researches into the matter of tittlebats, or to examine (clinically, of course) the denizens of those Hampstead ponds whose source he discovered, are asked to record them without evoking the aid of co-authors of Mr. Pickwick's maturity.

It would be, perhaps, inviting reproof to suggest that this new scheme to commemorate the name of Hunting may fittingly replace the medallion whose removal from the cover of THE RECORD caused some dismay. Like the head of King Charles in poor Mr. Dick's memorial that medallion made not a few appearances in our pages, but perhaps the great editor himself would prefer that his name attracted clinical papers to enhance the content of the journal he founded. At least by inviting work which will be eligible for the awards, an ambition dear to his mind—that of publishing an increasing quantity of clinical work of high standard—will be maintained.

Inguinal Hernia in Sheep

BY
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THE relative incidence of inguinal hernia in sheep—as with so many other conditions—is not known with any certainty, and it is only by appropriate and somewhat subtle interrogation of shepherds and sheep-farmers that an approximate estimate can be arrived at. By such methods and by personal observation it is concluded that the incidence in tups varies with the conditions of husbandry. In normal breeding-flocks carrying only the number of tups required for breeding purposes the incidence is very low. In Blackface tup-rearing flocks, however, where very often the animals are housed in large closed sheds with 20 to 40 shearling tups kept together, the condition occurs in at least five per cent. of the animals.

Comparison of the incidence in different breeds is difficult, if only because one's experience is limited by geographical considerations and by the breed popularity in any given area. The writer has little doubt, however, that the Blackface breed is more often affected than others. This is due to the method of tup rearing in courts, to the massive head and horns of these animals, and to the more aggressive nature of the male of this breed. The cause of inguinal hernia is almost certainly traumatic. One has only to witness the head-on collision of two arrogant Blackface tups to appreciate the extent of the intra-abdominal pressures resulting. It might be considered that the condition was of a hereditary nature, as in the boar, but experience makes one doubt this; however, as a precaution the writer has been unwilling to attempt any surgical correction in tup lambs.

Description of Condition

Normally, as the breeding season approaches, there is a considerable amount of erythematous reaction (flushing) in the inguinal and lower abdominal regions of tups in good condition and since most hernia conditions appear at this time, this, with hormonal stimulation, is probably a significant factor in predisposing to injury. The condition is relatively easily observed by those tending the animals; a pronounced stiffness in the gait, drawing attention to the abnormal size of the scrotum. Palpation of the swelling confirms the diagnosis and distinguishes the hernia from orchitis or swelling of the testicle and scrotum, such as may result from direct injury of that region. Palpation also appears to cause little pain and the testicle and hernia contents can be distinguished quite readily. If the hernia is relatively recent the testicle on the affected side may be swollen due to the compression of the spermatic cord in the region of the inguinal ring. Within a few weeks gradual atrophy of the testicle commences and adhesions of the hernial contents to testicle may be forming.

Inguinal hernia, although it may not affect the potential breeding value of a tup, considerably restricts his mobility and appears to limit his natural aggressive spirit. On a hill farm this state is tantamount to impotence and for this reason, for some five years past, attempts have been made at surgical correction.

Methods of Correction

(1) *Mechanical Support*

Shepherds have found that when this condition occurred during the mating season, a recently developed hernia could be reduced and restrained by applying a bandage, usually a hay rope, round the neck of the scrotum. Provided that this was done, and the correct tension of bandage achieved, the tup was able to continue his breeding activities and be normally fertile. Attempts at covered castration, as in the standard operative procedure in colts, invariably appeared to cause marked depression and gross swelling of the whole scrotum if attempted during the breeding season. This type of depression in sheep is considered to be a most recalcitrant condition very often with serious consequence. As has been observed by others in practice it is more satisfactory to castrate a mature sheep by a ligature of the whole scrotum than to attempt surgical removal even of one testicle. These considerations apart, it seems obvious that the repair of inguinal hernia by removal of a testicle was a confession of failure and a challenge to one's surgical competence.

The hernia is almost always unilateral, although a few cases have been observed where both sides of the scrotum have been involved. The right side is much more commonly affected, due, no doubt, to the partial screening of the left internal inguinal ring by the rumen. The most common contents of the hernia are omentum and small intestine. In one case the bladder was found to be prolapsed. No form of strangulated hernia has been observed, and it would therefore appear that the inguinal ring forms a much more elastic hernial limit than would be the case in a hernia elsewhere; also movement of the animal would tend to massage the contents of the hernia and prevent massive congestion from becoming established.

(2) *Surgical Correction*

(*a*) In a period extending over five years the writer has attempted correction in a total of 51 cases, using various methods. In the earlier attempts the neck

of the scrotum on its proximal surface was opened high up over the external inguinal ring and an attempt made to tighten the tunica vaginalis without opening into the hernia. Normally, no separate hernial peritoneal sack is present; the prolapsed abdominal contents being contained in the pouch of parietal peritoneum which forms the tunica vaginalis. When the hernia has been reduced (assuming no adhesions) the loose tissue including tunica vaginalis around the external ring was gathered and an effort made to reduce the size of a potential hernial opening. This method, which was done with local anaesthesia, was most unsatisfactory since:—

(1) Many cases had adhesions of hernial contents to testicle or spermatic cord and it was often impossible to achieve separation;

(2) it was difficult to gauge the extent of tightening required to achieve support without causing strangulation of spermatic cord, and

(3) it was difficult to make the repair sufficiently strong to maintain correction.

(*b*) The next method attempted was very similar to that described by E. R. Frank in "Veterinary Surgery Notes" of an operation for inguinal hernia and conservation of the testicle in the bull. Laparotomy was carried out in rams from the appropriate flank and after return of the hernial contents to the abdomen by traction from within and by pressure on the scrotum, an attempt was made to suture the internal inguinal ring. This operation had the same disadvantage as the first where adhesions were present in the scrotum; also the difficulty of successfully suturing the internal inguinal ring in a sheep will be appreciated. In only one case out of seven treated by this method was a satisfactory repair effected. In this animal part of the omentum was included in the sutures closing the inguinal ring.

(*c*) The third method, on which most attention has been concentrated, has been found most satisfactory. As a general anaesthetic Nembutal is used, given into the jugular vein. The normal weight of a Blackface shearling ram is from 140 to 180 lb. The anaesthetic can safely be injected quite quickly and immediate anaesthesia is achieved with 20 to 30 c.c. and lasts for about 40 minutes. Recovery takes only a further 30 minutes until the animal is standing normally.

The anaesthetised animal is placed on his back and maintained in this position, using suitable support. The area over the hernia, together with part of the abdomen, are clipped and cleaned. Cetavlon tincture is used as preparatory skin dressing and appears to be extremely effective under field conditions. A skin incision, about 5 inches long, is made from two inches above the neck of the scrotum on the abdomen, *i.e.*, about an inch above and medial to the vestigial teat, down the scrotum parallel to mid-line in the centre of the hernial swelling. Skin haemorrhage is controlled with some care, since it is undesirable that blood should gain access to the inside of the scrotum. The edges of the skin wound are pulled well apart to expose the tissues underneath. The external cremaster muscle is well developed in sheep and easily distinguished, slightly lateral to mid-line. Separation of subcutaneous fasciae down to this structure is by careful dissection breaking through cremaster muscle along the length of its fibres, and the tunica vaginalis to enter the cavity of the scrotum.

Again carefully avoiding, or controlling, haemorrhage this opening is enlarged by pulling apart the edges until the wound is about 3 inches long. The edges of the tunica are fixed by tissue forceps. A quantity of serous fluid exudes and is swabbed dry and the hernia contents exposed and explored. In most cases this is entirely omentum, which is pulled out through the wound and any adhesions to testicle or spermatic cord carefully dissected; avoiding haemorrhage if possible. The omentum is held up as a fan-shaped mass converging on the inguinal ring and pressure applied to bring down as much as possible from the abdomen. Breaking through this omentum by digital pressure at about six points, ligatures of No. 4 catgut are applied to each separated part as close to the inguinal ring as possible.

One section of omentum, about the thickness of a finger, is ligatured about 2 to 3 inches further from the inguinal ring than the other; the ends of this ligature left uncut and held by forceps. It is important that the ligaturing should be efficient, bearing in mind the difficulty of tying off a structure so largely composed of fatty tissue. The larger, more obvious, blood vessels can be ligated separately. The cut ends of omentum are returned to the abdomen through the inguinal canal leaving the portion with uncut ligature as described, protruding. Since one aim is to obtain partial occlusion of the canal with this section of omentum, its thickness will vary from less than that of one finger to two fingers, according to the size of the inguinal opening. It has been found that when the opening will not readily admit the passage of two fingers into the abdomen, all the severed ends of omentum can be returned and the wound closed. Normally, however, the protruding part of omentum is incorporated in the repair of the wound in the tunica vaginalis, being included in the edge to edge closure using No. 0 catgut. The outer surfaces of tunica are brought into apposition as in the normal Czerny-Lembert inversion suture; using a large overlap since a great looseness of tissue will have resulted from the pressure of the hernia.

Penicillin and sulphamezathine powder is dusted into the peritoneal wound before and after closure. After fixation of that section of omentum the long ends of the ligature are removed. Fascia can be drawn over this wound using a fine catgut suture. The skin is sutured with medium braided nylon and a bandage applied to include the neck of the scrotum and both testicles; partly as support for the wound and partly to prevent any oedematous reaction from developing. The supporting bandage is taken off after two days and skin sutures may be removed after a week.

Complications

In cases where intestine is present in the hernia, the procedure is the same provided that omentum is also present—the bowel being returned to the abdo-

men and omentum pulled down, ligatured, and a portion fixed in the same manner. In the relatively rare case of bowel prolapse with no omentum present, it is usually possible by inserting a finger through the inguinal canal to pull down sufficient omentum for anchorage, as described. When omentum cannot be grasped by finger exploration (helped by assistant applying pressure to sheep's abdomen or by raising the fore-end of the animal) an attempt is made to reduce the potential width of the inguinal ring by involution of the incised edges of the tunica vaginalis.

Summary of Technique

The effectiveness of this operative procedure appears to depend on:—

(1) the removal of omentum, which structure is most easily prolapsed into the scrotum;

(2) the partial occlusion of the inguinal canal by a predetermined thickness of omental tissue; and

(3) the reaction caused in the area around the inguinal ring and the proximal part of the tunica vaginalis due to surgical interference.

General

Several interesting facts emerge from these operations in sheep.

(1) The effective restraint achieved in this species when the animal is placed on its back on some supporting structure such as a wheelbarrow—enabling many simple procedures using local anaesthesia to be carried out. It is equally effective for the first method of hernia repair described and for mid-line caesarean section in ewes.

(2) The efficiency of Nembutal as a general anaesthetic in sheep giving quick achievement of anaesthesia, perfect relaxation, and rapid uneventful recovery. Inhalation anaesthetics are not desirable and other injection anaesthetics have not given ideal results.

(3) The very low powers of resistance of the scrotum in mature rams, the inadequacy of treatment when infection is established there, and the inability of obtaining adequate drainage from it without destroying testicular function.

(4) The successful reduction and repair of scrotal hernia has been achieved in some 32 cases out of 36 presented, by the third method described; the proportion of successes increasing as the technique became perfected.

Summary

A résumé of methods of dealing with inguinal hernia, particularly as found in Blackface shearling tups is given.

The technique now adopted as standard is given in some detail.

A Preliminary Note on a Micro-Complement-Fixation Test for Johne's Disease

BY

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A FORM of complement-fixation test for the diagnosis of Johne's disease in cattle and sheep has been developed at Wallaceville. A complement-fixation test described by Hole (1952 ; 1953) has been shown to be of promise in the diagnosis of the disease in cattle in the United Kingdom and in New Zealand (Chandler, in press) ; the new " micro " test appears to offer advantages in easier and faster technique, smaller quantities of reagents and improved results.

The antigen is prepared from a bovine strain of *M. johnei* grown on Reid's synthetic medium. The growth is autoclaved at 15 lb. pressure for 20 minutes, filtered, washed with saline, defatted with acetone and the product dried. The dried product is then treated by methods similar to those used by Sigurdsson *et al.* (1945 ; 1946 ; 1947) to obtain a complement-fixing antigen from the gut of sheep affected with Johne's disease. 0·5 g. of the dried product is pulverised in a planetary ball-mill for six hours at 250 r.p.m. A preliminary extraction at *p*H 4 is made with 50 ml. saline and discarded. The main extraction is then made at *p*H 9·5 for one hour at 100° C., using a reflux condenser ; the antigen is recovered as supernatant after centrifuging and its *p*H adjusted to 7·2. (It is possible that the defatting and/or the preliminary extraction at *p*H 4 can be dispensed with.)

The antigen is phenolised to prevent contamination, titrated and kept in a refrigerator. Batches have been kept up to six months and can probably be kept indefinitely ; the antigen resists freezing with no loss of activity. It is thus an extremely stable reagent. 0·5 gramme of defatted *M. johnei* can produce sufficient antigen for the testing of 4,000 different sera.

Inactivation of the bovine sera is carried out, in 1/5 dilution, at 62·5° C. for 30 minutes. Inactivation of the ovine sera is carried out similarly but in 1/2 dilution. Results using other temperatures of inactivation were unsatisfactory. (Hole inactivates bovine sera at 56° C. whereas Sigurdsson *et al* (1945 ; 1946 ; 1947) inactivates ovine sera at 62·5° C.)

Perspex trays,* size 18 by 14 by 1½ cm. with 80 countersunk " cells " of diameter 1·5 cm. and capacity 1·5 c.c. are used in the " micro " test, in place of the usual tubes. The advantages of these trays include ease of washing, handling, and reading, and the use of 0·1 c.c. reagent volumes throughout the test which results in a great saving of sera, antigen, complement and haemolytic system. The use of these trays in a Wassermann test has been described by Greenbury & Keningale (1954).

The procedure of the test is as follows : 0·1 c.c. volumes of sera at 1/5 dilution, complement as 2 M.H.D., and antigen are mixed and left at room tem-

* Prestware, Ltd., Lombard Road, London.

perature for one hour ; the perspex tray being occasionally agitated.

0·1 c.c. volumes of haemolytic system containing 3 per cent. sensitised red cells are then added and the perspex tray placed in an incubator at 37° C. for three-quarters to one hour ; again being occasionally agitated.

Serum controls and an antigen control are used. In addition, at least one known positive and one known negative serum are used in each test.

Before reading the result, the perspex tray is kept on the bench for 5 to 10 minutes to allow sedimentation of red cells. Complete fixation in the test " cell " is read as positive, complete haemolysis as negative, and any intermediate as doubtful.

Results have been obtained from a dozen separate micro-complement-fixation tests involving 240 different sera for which supporting diagnostic data have been available. All the bovine sera were also submitted to Hole's complement-fixation test.

The results obtained are summarised in the table.

It will be seen from the table that 19 positive results were given by the " micro " test for 20 cattle showing signs of Johne's disease, and for which supporting bacteriological evidence confirmed the disease. For the same cattle Hole's test provided similar results. Three negative results were given by the " micro " test for three clinically suspected cattle in which the presence of the disease could not be demonstrated *post mortem.*

The " micro " test provided 97 per cent. negative readings in the case of cattle apparently free of Johne's disease and tuberculosis, whereas Hole's test provided 82 per cent. negative readings. In the case of cattle apparently free of Johne's disease, but some of which were affected with tuberculosis, 95 per cent. negative readings were provided by the " micro " test and 70 per cent. negative readings by Hole's test. In tests on tuberculous cattle the " micro " test appeared less sensitive to tuberculosis (and therefore relatively more specific for Johne's disease) than Hole's test.

The results obtained with sheep sera indicate that the micro-complement-fixation test will be of use in the diagnosis of Johne's disease in sheep. Unless certain modifications were made, Hole's test was found unsuitable for use with ovine sera in New Zealand (Chandler, unpublished).

The over-all conclusion from these limited results is that the micro-complement-fixation test is a very promising test for the diagnosis of Johne's disease. When compared with Hole's complement-fixation test the evidence indicates that the " micro " test is as accurate as Hole's test. There are indications that the " micro " test gives a lower proportion of " false positives " than Hole's test. This may be due to better elimination of anti-complement or greater specificity of the antigen in the " micro " test ; on the other hand, a lower over-all sensitivity of the " micro " test to mycobacteria may be indicated, but no evidence has been obtained that this reduces the practical effectivity of the test.

The prime purpose of this preliminary work was to develop a test that was comparably as accurate as Hole's test but easier and quicker to use ; the results indicate that this has been accomplished. Further investigation

(*Concluded at foot of col.* 1 *overleaf*)

TABLE I

Class	Diagnostic data	Micro test result	Hole's test result
23 cattle, clinically suspected to be affected with Johne's disease	20 cattle shown positive on *P.M.* examination (by demonstration of mycobacteria in ileo-caecal scrapings)	19+/20 1—/20	19+/20 1—/20
	3 cattle, whose *P.M.* examination (including ileo-caecal scrapings stained for acid-fast organisms) could show no evidence of the disease	3—/3	2—/3 1D/3
64 cattle, apparently free of Johne's disease and tuberculosis	*P.M.* examination (including ileo-caecal scrapings stained for acid-fast organisms) showed no evidence of Johne's disease or tuberculosis	62—/64 (97 per cent.) 2D/64 (3 per cent.)	52—/64 (82 per cent.) 6+/64 (9 per cent.) 6D/64 (9 per cent.)
76 cattle, apparently free of Johne's disease but some of which were affected with tuberculosis	*P.M.* examination (including ileo-caecal scrapings stained for acid-fast organisms) showed no evidence of Johne's disease, but showed tuberculosis in some cases	72—/76 (95 per cent.) 1+/76 (1 per cent.) 3D/76 (4 per cent.)	53—/76 (70 per cent.) 4+/76 (5 per cent.) 19D/76 (25 per cent.)
17 cattle affected with tuberculosis	*P.M.* examination showed all to be affected with tuberculosis	13—/17 4+/17	10—/17 3+/17 4D/17
9 sheep, affected with Johne's disease (non-pigmented variety)	Positive *P.M.* examination (by demonstration of mycobacteria in intestinal scrapings)	8+/9 1D/9	
12 sheep, " sensitised " artificially with a bovine strain of *M. johnei*	Vaccinated subcutaneously with 5 mg. of heat-killed *M. johnei* suspended in mineral oil	12+/12	Unless modified, Hole's test not suitable for ovine sera
44 sheep showing no evidence of Johne's disease	Born and bred on a Johne's disease-free property	43—/44 1D/44	

(D = Doubtful)

Leptospira icterohaemorrhagiae Infection in Calves in Northern Ireland

BY

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Introduction

THIS report is submitted to record the first recognised case of *Leptospira icterohaemorrhagiae* infection in calves in Ireland. The disease has previously been reported in Great Britain by Field (1949), Field & Sellers (1950) and by Ingram, Jack & Smith (1952). Leptospiral infections in calves are also found in other parts of the world but the *L. icterohaemorrhagia* species is relatively uncommon. For instance *L. pomona* is the causal organism in cattle in America, this infection so far having been found in 28 States.

History.—On February 22nd, 1955, two dead calves from the same farm were brought to this laboratory for *post-mortem* examination. One calf, a two-month-old white cross-bred heifer, had been affected with diarrhoea for four days and at *post mortem* showed pallor of the muscles, inflammation of the fourth stomach and bowel, poor physical condition and faeces matted on to the tail and hind-quarters.

The other calf was a Friesian-type heifer, three to four weeks old, and was affected with a generalised jaundice involving the visible mucous membranes, the sclera, subcutaneous tissues, fat, musculature, peritoneum and pleura. The lungs were congested and the liver was icteric and enlarged. The kidney cortex was pale and the medulla engorged and dark.

The history of the jaundiced calf was that in the first week of life it was affected with diarrhoea, lassitude and inappetence. It was treated for calf scour and appeared to recover, only to become ill again five days before death showing signs similar to the previous illness although diarrhoea was absent. The calf had been kept in the partitioned-off corner of a dark house and because of this, jaundice had not been noticed and other symptoms were not well defined.

Leptospirosal infection was suspected in the jaundiced calf and the following cultural and biological tests were carried out.

Biological and Cultural Tests

(a) *Routine*

Urine and heart blood were extracted from the jaundiced carcase aseptically and inoculated intraperitoneally into white guinea-pigs 8 to 12 weeks old; 0.25 ml. blood was given to one, and 0.5 ml. urine to the other. They were kept under observation daily.

Both were found dying exactly nine days after inoculation. They were markedly jaundiced and on being killed showed the following *post-mortem* changes in varying degree:—

Jaundice of sclera, snout, subcutaneous tissues, peritoneum, pleura, liver, kidneys and lungs, and widespread haemorrhage involving bowel, kidneys and lungs. In the lungs, the haemorrhage took on a typical butterfly-wing appearance and Dr. C. Cotton Kennedy of the Belfast City Hospital kindly confirmed that the *post-mortem* findings were typical of those seen in *L. icterohaemorrhagiae* infection.

Conclusive evidence on the presence of spirochaetes was obtained on dark-ground examination of fresh preparations of spleen and liver tissue. Motile leptospirae were seen in very large numbers in both organs.

(b) *Experimental*

Spleen and liver tissue and heart blood were passaged through further guinea-pigs from the two originally used and attempts made to isolate the organism in culture. For biological tests the emulsified material was always given intraperitoneally and varied in dosage from 0.1 to 0.5 ml. on each occasion. Over a three-month period 16 guinea-pigs varying in age from 8 to 20 weeks were used, and no indication was given that younger guinea-pigs were more susceptible than older ones. The results also indicated that the amounts of inoculum given had no influence in hastening death—this period on second and third passage being reduced to a minimum of six days from a maximum of 11 days.

Within this six-day period no guinea-pig would succumb whether inoculated with fresh spleen or liver material or with culture.

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is necessary before one can postulate that this test is more accurate than that of Hole, but there are indications of this.

Acknowledgments.—I wish to convey my sincere thanks to Mr. R. M. Salisbury for his encouragement and advice throughout these experiments, and to Mr. N. H. Hole for his co-operation in regard to the use of his test.

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At *post-mortem* examination the lesions in all cases, whether as a result of tissue material or culture inoculations, were similar in varying degree to those previously described. The butterfly haemorrhages and jaundice were prominent features and the spirochaetes were readily demonstrated in dark-ground illumination preparations of liver and spleen.

Cultures of the organism were made from the livers and kidneys of guinea-pigs following the second passage, using a modified form of Fletcher's medium for Leptospira; and guinea-pigs were successfully infected using 0.5 ml. inoculations of a 10-day growth.

Serological Tests

The farm was visited on March 4th, 1955, and all the cattle found to be in normal health except a two-month-old heifer calf which had been affected with scour some weeks before, and at the date of the visit had almost recovered from a febrile illness of unknown aetiology lasting four or five days. The calf was not jaundiced.

The stock consisted of 31 cows and 14 heifers of all ages, mostly of Friesian type. Blood samples were taken from six of the young stock on the farm. Sample 1 was from the calf mentioned above. Sample 2 was from a month-old calf which had never been ill. This was the only calf sampled which had been in direct contact with the dead calves. Samples 3, 5 and 6 were from heifers of 8, 5 and 15 months of age respectively, none of which had ever been ill.

Sample 4 was from a three-month-old calf which had been affected with scour two months before. Apart from the dead calf the owner stated he had not seen any sign of jaundice in his stock at any time.

The blood samples were submitted to Dr. J. C. Broom, Wellcome Laboratories, London, who reported as follows:—

" . . . we have tested the six calf sera against *L. ictero, L. canicola, L. grippotyphosa, L. mitis* and *L. pomona*. The only results of any significance were with *L. ictero*, and were as follows:—

No.		
1.	Positive with *L. ictero* to	1/300
2.	,, ,, ,, ,, ,,	1/300
3.	,, ,, ,, ,, ,,	1/1,000
4.	Negative with all dilutions.	
5.	Positive with *L. ictero* to	1/1,000
6.	,, ,, ,, ,, ,,	1/30 (partial)."

These results are of strong significance, and may be taken as indicative of previous or present infection of at least four of the six calves tested. Field & Sellers considered a titre as low as 1/30 to be evidence of previous infection and in the human being a titre of 1/10 is regarded as positive (Smith & Davidson, 1936).

The complete absence of any reaction against *L. pomona*, in particular, is interesting, considering in contrast the predominance of this strain of leptospira in cattle in other parts of the world.

Histological Findings

Sections were made of the liver and kidneys of the dead jaundiced calf. The liver was congested and contained small foci of inflammation in the parenchyma. Around most of the central veins was a small area of cloudy swelling or of necrosis which in some cases was being succeeded by an increase in fibrocytes. Very few fibrous strands were formed. The interlobular areas and the periportal tracts showed an increase in fibrocytes and a slight leucocytic infiltration.

In the kidney the cortex was anaemic and the glomerular capillaries slightly shrunken. Some of the convoluted tubules exhibited cloudy swelling. In the medulla the blood vessels were congested and in some areas there were small haemorrhages. A number of the collecting tubules were affected with a slight degree of cystic dilation and contained a hyaline fluid with epithelial debris, red blood corpuscles and leucocytes.

A silver impregnation method was not carried out on the calf tissues, consequently leptospirae were not demonstrated.

Histological examination of tissues from a guinea-pig which exhibited typical lesions on *post-mortem* examination was carried out. In the lungs the interalveolar capillaries were congested and many alveoli filled with blood. Near the large blood vessels there were a few cellular foci consisting mainly of lymphocytes.

There was marked hyperaemia of the renal cortex and haemorrhage had taken place into the interstitial tissues and tubules. Near the cortico-medullary junction and in the cortex there were some small inflammatory foci. The medulla was congested.

The liver was affected with cloudy swelling and the centrilobular areas showed early necrosis. Congestion was present affecting the sinusoids more than the central veins. There was a cellular infiltration in the portal tracts and near some of the central veins. The epithelium of the smaller bile ducts appeared swollen.

Liver sections prepared by Levaditi's silver impregnation method showed an abundance of leptospirae.

Discussion

The main purpose of this communication is to record the incidence of a further proven case of infection in the calf with *L. icterohaemorrhagiae* in the British Isles and the first in Northern Ireland.

The source of the infection has not been proven but was almost certain to be from food contaminated by rats on the farm. Unfortunately no opportunity was presented to study the vermin to prove the point. The infection on the farm must nevertheless have been fairly widespread, as four of the five reacting calves had at no time been in contact with the one which died of the infection. A pointer also is given to the chronic nature of the infection of the farm; this being supported by the fact that calves of five and eight months of age showed blood titres of 1/1000 and a 15-month-old heifer showed a titre of 1/30.

The absence of serum agglutinins to four other different species of leptospirae is an important control in establishing the species on the farm as *L. icterohaemorrhagiae*. The serological tests indicate also that infection of the calf can take place without an

obvious resulting clinical illness, though in one calf at least a transient febrile reaction may have been a clinical symptom. Ingram *et al.* (1952) have already demonstrated this presence of sub-clinical infection in calves.

The observations made on guinea-pigs have confirmed the infection as *L. ictohaemorrhagiae* and add a contribution to the histological picture in lung, liver and kidney of affected animals. It is worth emphasising, however, that the age of guinea-pig used did not appear to be important in the passage of infection. Neither did the incubation period vary outside 6 to 11 days following either the use of cultures or infected tissue.

Summary

A case of *L. icterohaemorrhagiae* infection in a two-month-old calf from a farm in Northern Ireland is described; the organism being isolated from the carcase *via* guinea-pigs. Six young cattle on the farm were subsequently tested for species agglutinins and five were found to show titres varying from 1/30 to 1/1000. Only one of these had shown evidence of previous clinical disease but this was not proven to be due to the spirochaete. The sera were tested against *L. pomona, L. canicola, L. grippotyphosa* and *L. mitis*, and found to give negative results.

An account is given of the writers' observations of the infection in guinea-pigs and of the histology of affected guinea-pig tissues.

Acknowledgments.—We are grateful to Dr. J. C. Broom of the Wellcome Foundation Laboratories for his willing help with the serology tests, and to Dr. Cotton Kennedy, of Belfast City Hospital, for his observation and comment on biological material.

For technical assistance we are indebted to Mr. T. G. McLelland and Mr. S. Rodgers in our own laboratory, and we thank Mr. W. J. Wilson, M.R.C.V.S., of Ballyclare, for bringing the outbreak to our attention.

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OVERSEA SERVICE DIVISION, COLONIAL OFFICE

The following appointments have recently been made in the Oversea Service Division, Colonial Office:—

A. E. Dorman, J. F. Hart and R. W. E. Lewis (veterinary officers, Kenya), provincial veterinary officers, Kenya; K. D. S. MacOwan (deputy director of veterinary services, Kenya), director of veterinary services, Kenya; C. P. MacKenzie, veterinary education officer, Nigeria; S. M. Rimmer, veterinary officer, Tanganyika.

Some Applied Aspects in A.I. of Buffaloes

A Rapid Method of Standardisation of the Density of Buffalo Semen

BY

M. R. SHALASH

National Research Institute, Cairo

Introduction

TOGETHER with the establishment of artificial insemination centres in Egypt there should be simultaneous investigations into the standard A.I. methods which can be applied to our farm animals. It is desirable to have a record of the sperm production of each bull used at a centre, but considerable time and labour is involved in the routine estimation of the density of semen by the haemocytometer method. An attempt was therefore made to find a sufficiently accurate and rapid method of estimating density by means of Brown's opacity tubes. Rapid sperm counting methods have been reported previously by Burbank (1935) for the guinea-pig, Comstock & Green (1939) for the ram, Salisbury *et al* (1943) for the bull, and Parsutin & Rumjanceva (1938) for the stallion. In general the method used was that of concentrations of sperms in diluted semen samples being visually compared with opacity standards. A photometric method was used for ram semen by Comstock & Green and for bull semen by Salisbury *et al.* These workers found that the concentration was determined by photoelectric colorimeter with an accuracy equal to that obtained with the haemocytometer. The visual comparison of diluted semen with opacity standards resulted in an estimate of concentration only slightly less accurate than that obtained with the other two methods. Parsutin & Rumjanceva (1938) (see Anderson, 1945) prepared a set of seven test tubes containing sperm in concentration of 10, 50, 100, 200, 300, 500, 1,000 million sperm per mm. Visual comparison gives a near enough approximation as tested by sperm count. Certain portions of the ejaculate may be low in sperm concentration, as in the boar (McKenzie, Miller & Banguess, 1938) and also in the stallion, jack, and dog in which the accessory secretions make up a large part of the ejaculate (see Anderson, 1945). Lambert & McKenzie (1940) therefore stress that care should be exercised to see that the sample is representative of the whole ejaculate (see Anderson, 1945). Shaffner & Andrews (1943) have described a method for determining the volume of sperm cells in bull and fowl semen by centrifuging.

The aim of the present work was:

(1) To ascertain if the above method for the rapid estimation of the sperm number could be applied to buffalo semen.
(2) To determine if separate constants and graphs would be required for individual buffalo bulls or if one formula would suffice for all bulls.

Experimental

Since the accuracy of the rapid method is determined by the comparison with the haemocytometer technique, an accurate method of estimation with the

latter is essential. 0.1 ml. of buffalo semen was taken with a precision pipette and added to 9.9 ml. of formol saline making a first dilution of 1/100. 1.0 ml. of this dilution was then added to 5, 7 or 9 ml. of formol saline to make dilutions of 1/600, or 1/800 or 1/1000 respectively. The cytometer slide and cover-slip were thoroughly cleaned and dried. The cover-slip was placed in position and gently rubbed on the slide until Newton's rings appeared, showing that close contact had been made. With a broad-bore dropping pipette, the initial dilution was thoroughly mixed by sucking up and down. When transferring the dilution to the slide, the first three drops from the pipette were discarded and the fourth drop run under the cover-slip. The slide was then allowed to stand for at least 10 minutes. Fifty small squares from each of three slides were usually counted for each dilution. This technique was used throughout the whole work. (Walton's technique.)

Estimation of density by opacity method

Technique

0.1 ml. of the semen sample was sucked up in a precision micropipette and added to an appropriate quantity of normal saline to make dilutions ranging from 1/20 to 1/50, according to the gross density of the sample in question. This diluted sample was compared with Brown's tubes and the opacity estimated.

In recording the opacity, it was found best to lay the unknown between two consecutive standard tubes on a piece of white paper with thick, bold type, and to view the print through the tubes. The comparison must be done fairly quickly before the spermatozoa settle down. With practice, it was found possible to estimate intermediate opacities between two Brown's tubes to the nearest fifth of the difference. After ascertaining the Brown's equivalent of the diluted semen sample, more semen or formol saline was added to bring the opacity to match, as accurately as possible, the nearest standard tube. From the matched sample, by appropriate dilution, simple multiples of the original sample were obtained. Two or more of these were taken and compared with their equivalent standards, each subsample was diluted tenfold, *i.e.*, Brown's 1 was diluted 1/10 and Brown's 2 was diluted 1/20, etc., and three counts of each dilution were made on three different slides. (Kyaw's technique.) From the mean of the three counts, the numbers of spermatozoa per ml. of that particular opacity was calculated and plotted on a graph. Graphs were made for each sample from each bull and also the means of three samples plotted as a common graph for that bull. These graphs show that they are linear and run very closely together, and the divergences do not appear to be of great significance. It follows that it should be possible to derive a satisfactory mathematical formula common to all bulls.

Analysis of the data

Since the relationship between density and opacity is known to be linear, the appropriate formula is $y = a + bx$, where y = density, x = opacity, b = the ratio constant (slope) and a = the intercept constant. At the extreme limit of dilution, when the number of spermatozoa present is zero, the opacity should also be zero and the curve pass through the origin, in which the spermatozoa are suspended, a will have a small negative value. In order to calculate the values of b and a, it is desirable to have a large number of separate estimates of x and y, covering a wide range of opacities and densities, and each determination should be derived from a separate sample. Such determinations were made and the results are given in Table I and Fig. 1 (overleaf).

An analysis of covariance between opacity and density was performed to study the difference among bulls as shown in Table II (overleaf).

The differences among individual bulls in opacity and density were significant. The regression of density on opacity did not differ significantly among bulls. Then, one regression equation was computed for all the bulls :

$$y = 4.837x - 0.53$$

The standard error of b was found to be $\pm$ 0.10 and did not differ significantly from a hypothetical 6 of 5. Also a had a standard error of $\pm$ 0.62 and did not differ significantly from zero. Thus the regression equation $y = 5x$ may be used in place of the computed formula. This will facilitate the work involved in calculating the density of any sample once its opacity is known.

The results obtained from diluted semen samples estimated by Brown's tubes to and the results of the same samples measured by the haemocytometer, are shown in Table III.

TABLE I

SHOWING THE RELATION BETWEEN OPACITY AND DENSITY FOR SINGLE SAMPLES OF BUFFALO BULL SEMEN

Bull	Sample number	Opacity	Density	Bull	Sample number	Opacity	Density
Zarif ...	1	9·2	44·5	I.M. ...	1	9·8	50·5
	2	7·4	36·5		2	8·4	43·5
	3	4·8	22·5		3	6·0	31·5
	4	3·0	14·0		4	4·4	23·0
I.B.E. ...	1	9·0	40·0	Gouma ...	1	6·2	30·0
	2	6·6	29·0		2	5·0	24·0
	3	5·2	22·5		3	3·8	16·5
	4	3·2	14·0		4	2·0	10·0
E.M. ...	1	8·0	37·0	A.B. ...	1	7·8	36·0
	2	6·0	28·5		2	6·6	30·5
	3	4·6	22·5		3	5·4	25·0
	4	3·4	16·5		4	4·2	16·5

TABLE II
ANALYSIS OF COVARIANCE BETWEEN OPACITY AND DENSITY AMONG BULLS

Source of variation	DF	SS and products			Errors of estimate		
		Sx^2	Sxy	Sy^2	SS	DF	MS
Total	23	104·37	518·27	2,652·33	78·76	22	
Bulls	5	17·91	100·07	615·70			
Within bulls	18	86·46	418·20	2,036·63	13·83	17	0·814
Adjusted means (bulls)					64·93	5	12,986

The determinations shown in Table III are well within the variation to be expected from single measurement of density made by means of the haemocytometer as in routine practice. The rapid method may be considered sufficient to enable an approximate estimate of a density to be made from which the doses to be used in insemination can be calculated, and will enable the veterinarian to keep watch on any deterioration in the semen of the bull.

Summary

1. The rapid method of estimating the density of a semen sample by the use of Brown's opacity tubes can be applied to buffalo semen. This rapid method is sufficiently accurate for the use in artificial insemination centres.

2. There is a simple linear relation between opacity and density, the latter expressed in terms of millions of spermatozoa per ml. being approximately five times the opacity standard.

Acknowledgments.—The willing co-operation of Mr. F. M. El Mikkawi, B.V.SC., Animal Breeding Section, Egyptian Agricultural Society and Major I. El Ghoul, B.V.SC., Military Veterinary Corps, is gratefully acknowledged. The author is indebted to Dr. Y. Ghanem for statistical analysis and to Mr. D. R. Melrose, B.V.SC., M.R.C.V.S., of the Reading Cattle Breeding Centre, for helpful advice and criticism.

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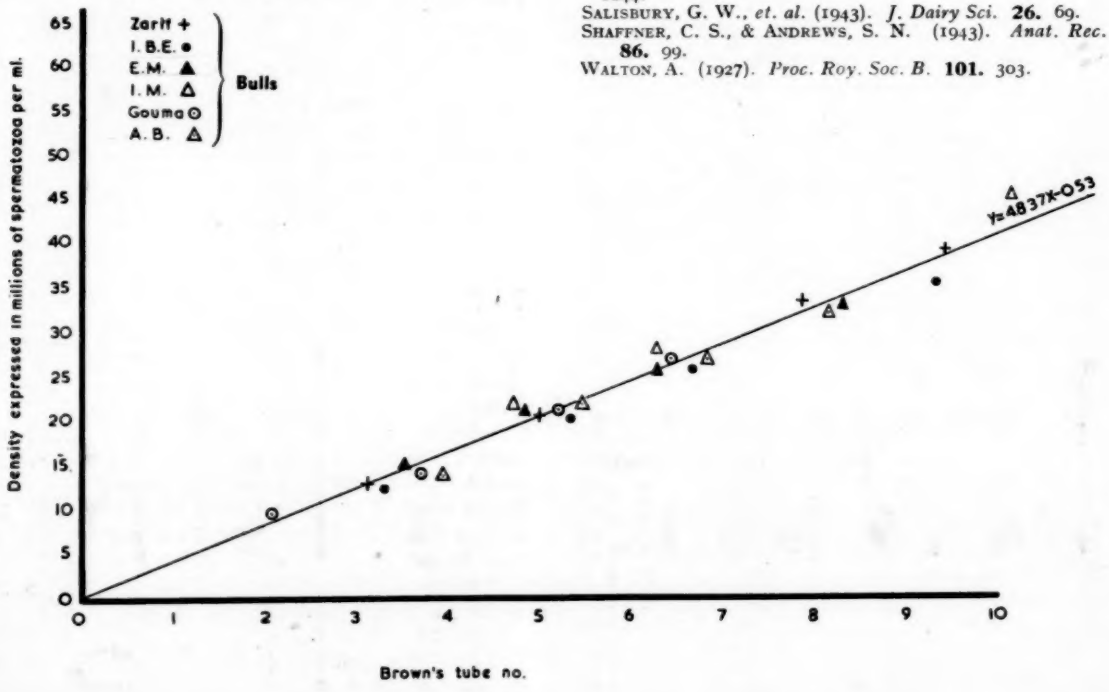

Fig. I. Relation between opacity and density for single samples of Buffalo semen

TABLE III

DENSITY OF BUFFALO SEMEN MEASURED BY HAEMOCYTOMETER AND COMPARED BY BROWN'S TUBES OPACITY STANDARDS

Number	Bull	Sample number	Dilution of sample	Brown's tube number	Density haemocytometer count (millions)	Original density of sample calculated from density + dilution (millions)	Density as calculated according to y = 5x (millions)
I	Zarif	1	20	9·2	44·5	890	920
		2	30	7·4	36·5	1,095	1,110
		3	40	4·8	22·5	900	960
		4	50	3·0	14·0	700	750
II	I.B.E.	1	20	9·0	40·0	800	900
		2	30	6·6	29·0	870	990
		3	40	5·2	22·5	900	1,040
		4	50	3·2	14·0	700	800
III	E.M.	1	20	8·0	37·0	740	800
		2	30	6·0	28·5	855	900
		3	40	4·6	22·5	900	920
		4	50	3·4	16·5	825	850
IV	I.M.	1	20	9·8	50·5	1,010	980
		2	30	8·4	43·5	1,305	1,260
		3	40	6·0	31·5	1,260	1,200
		4	50	4·4	23·0	1,150	1,100
V	Gouma	1	20	6·2	30·0	600	620
		2	30	5·0	24·0	720	750
		3	40	3·8	16·5	660	760
		4	50	2·0	10·0	500	500
VI	A.B.	1	20	7·8	36·0	720	780
		2	30	6·6	30·5	910	990
		3	40	5·4	25·0	1,000	1,080
		4	50	4·2	16·5	825	1,050

The 1956 Congress

We publish below a list of hotels in and near Leamington Spa. In the case of those outside, the approximate road mileage is given. We are asked to emphasise most strongly the necessity for early reservation of accommodation. Members should make their arrangements direct with hotels.

On the Thursday evening of Congress week (September 20th) it is hoped to arrange a visit to the current performance at the Shakespeare Memorial Theatre at Stratford-on-Avon. It is not yet known what play will be performed, but this information will be published later. The cost of tickets will be about 16s. each, and because block bookings have to be made in very good time those who would like to reserve places are asked to write at their earliest convenience to the General Secretary of the B.V.A. at 7, Mansfield Street, London, W.1. It is important that enquiries should *not* be made to the theatre at this stage.

HOTELS IN LEAMINGTON SPA

Charge for Bed and Breakfast

	£	s.	d.
Regent Hotel	1	1	0
Crown Hotel		19	6
Manor House Hotel	1	5	0
Spa Hotel	1	1	0
Marlborough Hotel		19	6
Oaks Hotel	1	1	0
New Clarendon Hotel	1	5	0
Chesford Grange (3 miles)	1	5	6

Private Hotels—

	£	s.	d.
Angel, 145, Regent Street, Leamington Spa		16	9
Aikerton, Binswood Avenue		17	6
Amersham, Kenilworth Road		17	6
Arden, Clarendon Square		18	6
Armathwaite, Kenilworth Road	1	1	0
Bankfield, Newbold Terrace		17	6
The Lachine, Newbold Terrace		16	6
Roselands, Binswood Avenue		17	6
Sheiling, Beauchamp Avenue	1	1	0
Westella, Leam Terrace		15	0

HOTELS OUTSIDE LEAMINGTON SPA

	£	s.	d.
Lord Leicester, Warwick (2 miles) ...	1	1	0
Woolpack, Warwick (2 miles)		17	6
Queen & Castle, Kenilworth (5 miles) ...		16	6
Abbey, Kenilworth (5 miles)	1	1	0
Rouncil Towers, Motel, Kenilworth (5 miles)	1	8	6
Leofric Hotel, Coventry (9 miles)	1	17	6
Glebe Hotel, Barford (Private) (4 miles)	1	1	0
Kings Head, Wellesbourne (6 miles) ...		17	6
Falcon Hotel, Stratford-on-Avon (10 miles)	1	5	0
Red House Hotel, Stratford-on-Avon (10 miles)	1	5	0
Ettington Park, Ettington, Warwick (12 miles)	1	1	0
Craven Arms, Southam (7 miles)		16	0
Welcombe Hotel, Stratford-on-Avon (10 miles)	2	5	0

The William Hunting Awards

WITH the double purpose of further perpetuating the name of William Hunting, founder and first editor of THE VETERINARY RECORD, and of attracting more papers of clinical interest—a matter in which he was deeply interested—the Editorial Committee propose to establish annual William Hunting Awards for clinical work published each year. The Awards will comprise two first prizes, each of a silver medal together with the sum of £25, while bronze medals will be awarded to the writers of other papers which are deserving in the judges' view of special recognition. The two principal prizes will be awarded as follows:—

(a) For the best paper, having a clinical application, by an author or authors in private veterinary practice.

(b) For the best paper by an author or authors in any branch of veterinary work who have been qualified less than five years, provided that the paper is based on clinical material obtained from practical field work and not on experimental material.

The judges who will be invited to serve by the Editorial Committee, will consist of three members of the profession who are in private clinical practice. They will be asked to meet in January of each year to discuss the clinical papers that have been published in the preceding 12 months, and will meet a second time to decide upon the winners, whose names will be notified to the Editorial Committee in time for announcements of the winning articles to be published in the first issue of THE VETERINARY RECORD in June of each year. The actual awards will be made during the following annual Congress of the Association.

It is realised that considerable development and elaboration of the scheme as outlined above may become both necessary and desirable in the light of experience, but it is hoped that readers will welcome, as a beginning, what is at present proposed.

The Editorial Committee is indebted to a member in private practice, Mr. P. R. Greenough, for putting forward the original suggestion which has given rise to the decision to establish the William Hunting Awards. The Committee hopes very much that members in private practice, and younger workers in other spheres, will be encouraged to submit work for publication from which a choice can be made that will be worthy of the great name these Awards will bear.

VETERINARY MYCOLOGICAL REFERENCE LABORATORY

Owing to the very great number of specimens received at the Veterinary Laboratory, Weybridge, it is regretted that the full diagnostic service must be temporarily suspended in order to complete the work already in hand. It will be appreciated if only material from urgent cases of suspected mycoses are sent to Weybridge for the next few months. Other material should be sent to the regional Veterinary Investigation Centres.

The Benjamin Ward Richardson Lecture

We are indebted to a correspondent for the following Abstract of the lecture delivered on December 7th, 1955, by Professor E. G. White of the University of Liverpool Faculty of Veterinary Science. It is published by courtesy of the Royal Society of Health.

THIS public lecture is held each year at the Royal Society of Health, formerly the Royal Sanitary Institute, to honour the memory of Benjamin Ward Richardson who made many valuable contributions to public health, including founding the Model Abattoir Society. The Chairman at the lecture was Professor H. Burrow, Professor of Veterinary Medicine at the Royal Veterinary College, London, and the audience was composed of sanitary inspectors, medical officers of health and veterinary surgeons.

The lecturer pointed out that although most of the livestock that are slaughtered each year go through abattoirs, few of them are examined by veterinary surgeons and few investigations are made at abattoirs or knackeries into animal diseases. We also know little of the incidence of animal diseases during life, except for the notifiable diseases, although during recent years a number of surveys have been carried out. The only published records for the material that comes to abattoirs consist of small sections in reports of medical officers of health which usually merely record how many animals of each species were slaughtered, how many tons of meat and offal were rejected as unfit, and the percentages of carcases totally or partially condemned for (a) tuberculosis, and (b) diseases other than tuberculosis. Occasionally a little more information is given, sometimes there is even less. Human medical statistics would be of very limited value if no death certificates or sickness records existed except for a few acutely infectious diseases and if nearly all autopsies were carried out by " Public Health Inspectors " under nominal veterinary supervision. The comparison is not, of course, entirely valid because livestock do not come to abattoirs primarily for *post-mortem* examination but for food, and because in any case the majority of them are clinically healthy. Nevertheless, a vast amount of valuable pathological material is available for study each year in abattoirs and knackeries, and veterinary science in this country is the poorer for failing to make more use of it.

In 1954 a total of some 3,500,000 cattle (including 1,000,000 calves), 9,000,000 sheep and lambs, and 9,000,000 pigs were slaughtered in Great Britain. This represents about half the total livestock population as revealed at the June census. How many animals go to knackeries is not known for no figures are published, and yet these animals include many of the most advanced cases of injury and disease that exist on the farm and would well repay recording and study. Knackeries provide advanced cases of Johne's disease, pyelonephritis, traumatic reticulitis and pericarditis, parasitic infestations such as fluke, and a wide variety of other diseases which could provide the pathologist with information about the incidence and characters of such diseases and the practitioner with a better understanding of the relationship between symptoms and lesions.

Official interest in knackeries relates mainly to their constituting a potential public nuisance, causing unnecessary suffering, or issuing meat for human consumption. Worth-while provisions would be to ensure that no meat or offal leaves knackeries unless it is sterilised, and to keep simple records of the animals of each species that come to them. The records should be collected by a central authority and analysed each year.

The Report of the Interdepartmental Committee on Meat Inspection (1951) repeatedly referred to the value of abattoir records in providing knowledge of animal diseases but advised that such records should be uniform. The lecturer mentioned that study of a large number of existing records as published in reports of medical officers of health showed that the figures are of little value except for tuberculosis. The figures for " diseases other than tuberculosis " varied so widely from one abattoir to another for the same class of stock that it is clear that the criterion adopted for their inclusion is not constant. In 1954, for instance, the percentages of " beasts " condemned, wholly or in part, for diseases other than tuberculosis ranged from 1.85 in Birmingham to 56 in Bristol. The higher figures are more likely to be correct, for few cows, sheep or pigs provide offal which fails to show at least some localised disease process that merits local condemnation by trimming. Another illustration of the doubtful value of existing records was provided by the condemnation of nearly half of a large batch of diseased poultry because of " oedematous oviduct," a condition which poultry workers very rarely encounter. When condemnation as human food is the guide and not classification of disease processes, it is not unnatural that a number of diseases are grouped together and even listed under unfamiliar names. Such classification makes the records of very little value to animal pathology, for which in any event they were not intended.

How can more use be made of the material that comes to abattoirs and knackeries? Already a number of abattoirs, bacon factories and knackeries are glad to welcome veterinarians or research workers to follow up individual animals or conduct investigations into specific diseases. There is an opportunity and a need to extend this line of study. Meat inspectors are very helpful in collecting information or material for disease investigations and would welcome the co-operation of the veterinarian; their task is to decide whether meat is sound or unsound and not to study the nature and pathogenesis of the disease processes which render it unsound except insofar as is necessary to make a rational judgment. Whatever records they may collect must inevitably be less detailed and less accurate than those which the trained veterinary pathologist would prepare.

Abattoirs and knackeries should be more widely used as research centres for studying animal diseases. Material exists in abundance and little use is made of it except at those few centres where veterinarians are actively engaged in its study. Across the Channel, on the other hand, a very large part of veterinary pathology, including microbiology and parasitology, has always been carried out in abattoirs, and these centres have been developed into units which provide information about animal disease as well as efficient inspection to ensure the safety and wholesomeness of meat and offal for human consumption. In this country, abattoirs have been designed and run for meat inspection, and disease investigation has been mainly the province of individual workers who have used them for surveys of particular diseases, often merely by collecting material from them and examining it elsewhere. The condemned material in abattoirs really belongs to veterinary science for it tells the story of the ravages of the diseases of farm livestock which veterinary surgeons spend their lives trying to control.

One step that could be taken at once is to record abattoir statistics in standard form, collect them and publish them each year, not only in the many dozen annual reports of medical officers of health, but also in some such publication as the Report on the Animal Health Services in Great Britain which the Ministry of Agriculture, Fisheries and Food issues each year. Here they would be read by those most concerned with animal disease—the veterinary profession. Some sort of analysis of the records and comment on them would also be valuable.

All forms of survey have their limitation, whether they be conducted on farms, at abattoirs, in veterinary practices, or from material sent to laboratories. There is, however, scope for preliminary survey work within abattoirs by veterinary research workers in order to see what are the common diseases in different areas. In one county it is said that about half of all cattle livers are affected with fluke: if this is so, there is ample scope for translating this knowledge into preventive measures on farms within the county. There are many other diseases whose detection in the abattoir can with advantage be followed up by action on the farm, through the veterinary surgeons concerned. The first essential is accurate recognition of the disease condition, then transmission of the information to the practitioner, together with any advice he may require about methods of prevention or control. This can only be done by the trained veterinary worker in the abattoir.

How can more veterinarians be employed in abattoirs in this country, bearing in mind the pattern on which abattoirs have been developed over many years? The lecturer suggests as a first step the creation of research posts for work to be carried out in, or in close association with, abattoirs and knackeries by establishing Research Fellowships. Such work might be done partly in existing research establishments, such as veterinary schools, Ministry laboratories, or veterinary research institutions, but an effort should be made to provide all large abattoirs with laboratory facilities adequate for general investigational work. No new public abattoir ought to be built without such accommodation. Research Fellowships might well be established by the Ministry of Agriculture itself for when the Ministry took over the local authority veterinarians as a result of the Agriculture Act of 1937 it denuded abattoirs of a number of veterinarians and transferred them to the large state-sponsored schemes for the control of animal disease in the field. To establish a dozen Research Fellowships would help to restore the position.

A second possibility is envisaged if the suggestion made in the Report of the Interdepartmental Committee on Slaughterhouses (1955) that local authorities should make a charge for meat inspection is eventually adopted. Such a charge might provide, in addition to the cost of meat inspection, funds for disease investigation in abattoirs, for to study such diseases would be no less valuable a service to the nation than is that which meat inspection renders to public health. The farmer gains nothing from meat inspection: it is the consumer who benefits. If the animal owner has to pay a fee for meat inspection he might also receive a benefit in the form of investigation of those diseases which result in his produce being condemned and his stock failing to thrive.

In 1954 Great Britain produced 1,500,000 tons of meat and bacon: to spend say £100,000 a year on disease investigation in abattoirs and knackeries would represent about 1s. 3d. a ton. A single disease may cause an annual loss of £1,000,000 a year and much of the loss is preventable.

An extension of animal disease research in abattoirs would increase knowledge of the distribution and nature of diseases of livestock and thus help in their prevention and control. It would also inevitably help to improve the standard of meat inspection. In most countries throughout the world animal disease study has for long been recognised as a function of abattoirs: the time is long overdue for the same recognition in Great Britain.

Current Literature

REPORT

Annual Report of the Department of Veterinary Services and Animal Industry, Uganda, for 1953.

The title of this department gives an indication of its functions. Disease control is not an end in itself, but an important part of the wider functions of the development of the livestock industry, so that it can make its fullest possible contribution to the economic and social welfare of the country.

Important as are the other functions of the department, disease control must remain its chief one and the Director is able to report very satisfactory progress during the year in bringing the main epizootics under control. Rinderpest, however, remains enzootic in some districts.

The value of prophylactic immunisation for the control of rinderpest and protection against its devastating effects is now appreciated by native stock-owners, who voluntarily submit their cattle for treatment. During the year some 123,000 cattle received either Kenya attenuated goat virus vaccine or lapinised virus vaccine.

In this generally successful campaign against rinderpest it is unfortunate that a setback has to be recorded. In one district where lapinised vaccine was used to quell an outbreak of rinderpest, the disease appeared in animals which had received vaccination only some four weeks previously.

The considerable mortality which followed indicated that in this case the vaccine had produced either no immunity or only a fleeting one. To make matters worse the disease appeared among cattle which had been revaccinated with a fresh batch of lapinised vaccine after the first breakdown. To bring the outbreak to a close, Kenya attenuated goat virus was finally used.

Trypanosomiasis

This is present to a greater or less extent in every district of the Protectorate. The effects of the disease are controlled by the administration of antrycide dimethyl sulphate in a standard dose of 4.5 mg. per kg. bodyweight.

The fact that in Uganda the infection of trypanosomiasis is spread not only by tsetse flies but also by stomoxys and other biting flies makes control more difficult. Endemic trypanosomiasis in cattle in areas free of tsetse is being eradicated by means of mass treatment with antrycide dimethyl sulphate. Over the past three and a half years over three-quarters of a million cattle have been dealt with. By means of this mass treatment absolute control over all strains of *T. congolense* infection has been effected and all tsetse-free areas of the Protectorate are now clear of infection. By this means also, the incidence of *T. vivax* infection, although not eradicated, has been greatly reduced and in all cases a marked increase in productivity has resulted.

It has been demonstrated experimentally that cattle grazing in heavily infested tsetse fly country and treated at 30-day intervals with antrycide dimethyl sulphate have continued to thrive over a period of two or three years. When, however, treatment has been suspended animals have shown *T. vivax* and/or *T. brucei* infection within three or four months.

Other diseases

Other diseases dealt with during the year include anthrax (12,000 vaccinations); haemorrhagic septicaemia (22,000 vaccinations); black quarter (22,000 vaccinations); East Coast fever, endemic throughout the greater part of the Protectorate; contagious bovine pleuro-pneumonia (confined for many years to one district only); foot-and-mouth disease recorded from all areas; tuberculosis (especially prevalent among Ankole long-horn cattle); and rabies (avianised rabies vaccine used in 206 dogs).

In East Coast fever endemic areas it is now apparent that malnutrition is a more important cause of mortality among calves than the disease itself and an introduced system of improved calf management has markedly reduced mortality.

Animal Industry

Under this title is enumerated the work done by the department to increase and improve the productivity of herds and flocks and the facilities for marketing—a large and arduous undertaking.

The livestock population in 1953 was 2,824,000 cattle and 3,840,000 sheep and goats, both totals show an increase over a census taken 10 years previously. Within the scope of animal industry the department's activities include: demonstrating improved methods of animal breeding, feeding and management, the establishment of experimental livestock farms for the breeding of selected indigenous stock, and for the

demonstration of the proper use of manure for increasing soil fertility for the growing of fodder crops. Modern dairy methods are also taught, as also is the better preparation of hides and skins for the export market. Agricultural shows are held regularly, as well as Community Development Weeks at which the department plays a big part.

Because of the presence of tsetse fly and the waterless nature of large areas of country much otherwise valuable grazing land is not utilised. In improving this situation the Director of Veterinary Services pays tribute to the valuable work done both by the Department of Tsetse Control and by the Department of Geological Survey. As a result of this work carried on over the past five years some 6,000 square miles of country have been reclaimed from tsetse fly and over 400 dams and catchment tanks have been constructed.

Mr. Randall, M.A., M.R.C.V.S., the Director of Veterinary Services, and his staff of field research officers, are to be congratulated on a year of progressive activity and highly successful results.

W. W. H.

News and Comment

THE ROYAL COLLEGE OF VETERINARY SURGEONS

The under-mentioned ladies and gentlemen were admitted to membership of the Royal College of Veterinary Surgeons on the dates shown against their entries:—

Attenburrow, Donald Percy, Pant Canol, Dyffryn Ardudwy, Merioneth. Nov. 25, 1955 (Bristol), B.V.Sc. (Bristol)
Beddows, Adrian Croft Lewis, c/o Cnwc-yr-Odyn, Llwyndafydd, Llandyssul, Cards. Dec. 17th, 1955 (Lond.).
Carroll, Una Patricia Julia (Miss), 15, Cowper Drive, Rathmines, Dublin. Dec. 13th, 1955 (Dub.).
Conroy, Patrick Joseph, Gortnorlen House, Ballacolla, Leix, Eire. Dec. 13th, 1955 (Dub.).
Cuthbertson, John Lee Howie, 15, Woodburn Terrace, Edinburgh, 10. Dec. 13th, 1955 (Edin.).
Davies, Michael Gough, Parkside, Leek, Staffs. Dec. 17th, 1955 (Lond.).
Dowdall, Francis Joseph, Main Street, Leixlip, Co. Kildare, Eire. Dec. 13th, 1955 (Dub.).
Dunne, Laurence Gerard, St. Francis, Whitestown Road, Rush, Co. Dublin. Dec. 13th, 1955 (Dub.).
Eastwood, Patrick Joseph, Molesworth Street, Cookstown, Co. Tyrone. Dec. 13th, 1955 (Dub.).
English, Robert Glenn, 8, Waterloo Park North, Belfast. Dec. 13th, 1955 (Dub.).
Fairhall, David Carl, Westbrook Farm, Westfield, Battle, Sussex. Dec. 17th, 1955 (Lond.).
Fenton, Brian Keith, St. Andrews, Lime Tree Lane, Bilton, Hull, Yorks. Dec. 17th, 1955 (Lond.).
Gahan, Michael Alexander, P.O. Box, 392, Nakuru, Kenya. Dec. 13th, 1955 (Dub.).
Gray, Colin George, 10, Fairfield Road, Petts Wood, Orpington, Kent. Dec. 17th, 1955 (Lond.).
Gripper, John Norman, 4, Gloucester Road, Guildford, Surrey. Dec. 13th, 1955 (Edin.), B.Sc. (Edin.).
Hardwick, Anthony Greir, Uplands, Headcorn, Nr. Ashford, Kent. Dec. 17th, 1955 (Lond.).
Hovell, George James Ramsay, 27, Drylaw Crescent, Edinburgh, 4. Dec. 13th, 1955 (Edin.).
Kay, Hugh Reid Murdoch, 44, Bennochy Road, Kirkcaldy, Fife. Dec. 13th, 1955 (Edin.).
Kirkbride, Leslie Major, 1, Office Street, Easington Colliery, Co. Durham. Dec. 13th, 1955 (Edin.), B.Sc. (Edin.).
MacKenzie, Roderick Muir, 73, Struan Road, Perth, Scotland. Dec. 13th, 1955 (Edin.).
McKinlay, David Ian, Brownrigg, Eastwick Road, Gt. Bookham, Nr. Leatherhead, Surrey. Dec. 13th, 1955. (Edin.).
Melluish, Hugh Keith, Rossall School, Fleetwood, Lancs. Dec. 17th, 1955 (Lond.).
Millar, John Adrian, Lighthouse Farm, Happesburgh, Norwich. Dec. 17th, 1955 (Lond.).
Morath, Derek Edward, 41, Shaftesbury Avenue, Roxeth, Harrow, Middx. Dec. 17th, 1955 (Lond.).
Murphy, Oliver Michael Gerald, A.F.C., 13 Ailesbury Road, Ballsbridge, Dublin. Dec. 13th, 1955 (Edin.), B.Sc. (Edin.), M.A. (Cantab.).
Nolan, John Joseph, Lansdowne Park, Drimnagh Road, Dublin. Dec. 13th, 1955. (Dub.).
Peters, John Burgess, c/o 28, Westley Road, Bury St. Edmunds, Suffolk. Dec. 17th, 1955 (Lond.).
Pigott, Robert Crosbie Cooper, 2, Ascham Road, Bournemouth, Hants. Dec. 17th, 1955 (Lond.).
Pocock, Eric William, St. Brelades, West Road, Berkhamsted, Herts. Dec. 17th, 1955 (Lond.).
Prior, John Gordon, White Gabies, Thorpe Lane, Hawksworth, Nr. Leeds. Dec. 13th, 1955 (Edin.).
Prole, John Henry Bruce, Elstow, Greville Park Avenue, Ashtead, Surrey. Dec. 17th, 1955 (Lond.).
Ramachandran, Payyalur Krishnaier, c/o P.R. Krishna Iyer, Padmalayam, Tattamangalam, via Palghat, S. Malabar. India. Dec. 13th, 1955 (Edin.), B.V.Sc. (Madras).
Roche, James Vincent, The Green House, Clara, Co. Offaly, Eire. Dec. 13th, 1955 (Dub.).
Sheridan, James Joseph, Ballyheelan, Kilnaleck, Co. Cavan, Eire. Dec. 13th, 1955 (Dub.).
Stack, Pascal Dosetheus John, Irremore, Listowel, Co. Kerry, Eire. Dec. 13th, 1955. (Dub.).
Strang, Robert Durham, c/o Blyth & Self, Ms.R.C.V.S., Coggeshall Road, Braintree, Essex. Dec. 17th, 1955 (Lond.).
Sutton, John Barratt, Lodore, Stanley Road, Great Malvern, Worcs. Dec. 17th, 1955 (Lond.).
Walsh, Maurice Cyril, Main Street, Midleton, Co. Cork, Eire. Dec. 13th, 1955 (Dub.).
Watson, Doreen Phyllis (Miss), 79, Hailsham Avenue, Streatham Hill, London, S.W.2. Dec. 17th, 1955 (Lond.).
Weaver, Anthony David, Cherry Corner, Molescroft, Beverley, Yorks. Dec. 13th, 1955 (Edin.), B.Sc. (Edin.).
White, Frederick, Rowett Research Institute, Bucksburn, Aberdeen. Dec. 17th, 1955 (Lond.).
White, James Joseph, The Cottage, Tulla, Co. Clare, Eire. Dec. 13th, 1955 (Dub.).
Williams, Gwynne Llewelyn, Nanthenfoel, Lampeter, Cards. Dec. 13th, 1955 (Edin.).
Woollett, Wilfred Gordon Willoughby Aston, 145, London Road, Sheffield, 2. Dec. 17th, 1955 (Lond.).
Wright, Michael Alan, 38, Cumberland Street, Macclesfield, Cheshire. Dec. 17th, 1955 (Lond.).

R.C.V.S. DECEMBER, 1955, EXAMINATIONS

Dublin

Second Examination

Physiology and Anatomy

Feeney, J. K.; Holloway, A. B.; Sweetman, W. L.

Physiology only

Barrett, J. N.; Berry, J. P.; Corry, D. M. G.; Crawford, H. M.; Delahunty, D.; Dickson, H. P.; Dowling, W. A.; Duignan, J. J.; Hannigan, J. H.; Leslie, N. W.; Lyons, Valentine; McIver, S. H.

(credit); McKervey, J. H.; McKinley, P. J. (credit); Maloney, R. (credit); O'Brien, T. J. (credit); Phelan, N. P.; Smyth, J. J.; Trouton, R. K.; Walsh, John.

Anatomy only

Boothman, J.; Demery, V. W.; Flanagan, P. D.; Hewitt, M. P.; Lawlor, Florence; McAuliffe, M. J.; Marray, E. A.; Murphy, J. E.; O'Reilly, D. J.; Smith, F. M.; Walsh, J. G.; Wilkie, S. D.

Third Examination

Hygiene only

Atock, M. A.; Carroll, Denis; Corcoran, M. P.; Doyle, I. M.; Downey, J. S.; Flanagan, J. P., Hoban, G. P.; King, M. B.; Monaghan, M. G. B.; O'Brien, Patrick (credit); O'Connell, John; O'Donnell, L. I.; O'Neill, Alexander; O'Neill, Conal; Quill, T. S.; Reidy, D. F.; Sheahan, T. J.

Pathology only

Clarke, J. P.; Dargan, Peter; Devereux, W. R.; Fallon, G. A.; Fogarty, W. P.; Kelly, J. A.; Kilroy, C. S.; Mangan, P. J.; Murphy, P. A.; O'Connor, S. P.; O'Driscoll, John; O'Hare, M. B.; O'Mahony, Jeremiah; O'Neill, J. J.; O'Sullivan, D. C.; O'Sullivan, F. J.; Wallace, James; Watkins, James.

Final Examination

Carroll, Miss U. P. J.; Conroy, P. J.; Dowdall, F. J.; Dunne, L. G.; Eastwood, P. J.; English, R. G.; Gahan, M. A.; Nolan, J. J.; Roche, J. V.; Sheridam, J. J.; Stack, P. D. J.; Walsh, M. C.; White, J. J.

(Completion of examination results.)

FOOT-AND-MOUTH DISEASE

The area described below will cease to be an infected area for the purpose of preventing the spread of foot-and-mouth disease on January 10th:—

In the County of Kent—The city of Rochester, and the boroughs of Chatham and Gillingham.

Petty Sessional Division of North Aylesford, the parishes of Isle of Grain, Allhallows, St. Mary, Stoke, Hoo, High Halstow, Cooling, Cliffe-at-Hoo, Frindsbury Extra and Higham and so much of the parish of Shorne as lies to the north and east of the main road (A.226) running from Rochester to Gravesend, including the said road.

HOSPITALITY REQUIRED

A second year French veterinary student in Toulouse would like to stay with a British veterinary family as a paying guest for about three weeks between July 10th and September 1st. His first interest is in horses, and then in cattle. He has seen some practice in France.

A 26-year-old Swiss veterinary student in his seventh semester at Zürich University would like to stay in England some time between the end of February and the beginning of April.

He hopes to see an animal hospital or a small animal practice in London, and speaks fairly good English.

The 21-year-old daughter of a French veterinary surgeon would very much like to spend the Easter holidays *au pair* or as a paying guest with a veterinary family in the London area or near to it.

Would any member interested in any of these suggestions kindly get in touch with the General Secretary, B.V.A., 7, Mansfield Street, Portland Place, London, W.1.

UNIVERSITY NEWS

Bristol

Final B.V.Sc. Examination, December, 1955

PASS

Greenham, Leighton Williams; Kidd, Alastair Robert Martin; Phillips, Bernard; Rowlands, Byron Clifford; Wicks, Brian Theodore.

NEW YEAR HONOURS

In the New Year Honours List published on January 2nd, the C.B.E. was awarded to Mr. E. F. Beckett, F.R.C.V.S., for political and public services in Dorset, and to Dr. S. G. Wilson, Director of Veterinary Services in the Northern Region of Nigeria. The M.B.E. was awarded to Mr. G. H. V. Blyth of the Veterinary Department, Federation of Nigeria. A knighthood was conferred upon Dr. Eric Ashby, Vice-Chancellor of Queen's University, Belfast, who, it will be recalled, was a guest of honour and proposed the toast of the Association at last year's Congress Banquet.

Services to research are recognised by the award of the C.B.E. to Mr. K. M. Smith, director of the Virus Research Unit of the Agricultural Research Council, University of Cambridge.

PERSONAL

Birth

GIBSON.—On December 25th, 1955, to Joan, wife of E. A. Gibson, B.SC., M.R.C.V.S., 18, Stretten Avenue, Cambridge, a daughter, Mary Theresa, sister for John and David.

Marriages

FUMPSTON—CHAPMAN.—The marriage took place on October 19th, 1955, at Christchurch, New Zealand, between William Anthony, only son of Mr. and Mrs. F. E. Fumpston of Edgbaston, Birmingham, England, and Elizabeth, youngest daughter of Mr. and Mrs. J. Chapman of Fendalton, Christchurch, New Zealand.

SUTTON—GRAY.—On Wednesday, January 4th, 1956, at The Oratory, Birmingham, John Barratt Sutton, M.R.C.V.S., of 15, Stanley Road, Malvern, to Jeanne Audrey Frances Gray of Franhyfryd, Llanaber, Barmouth.

R.C.V.S. OBITUARY

We record with regret the death of the following member of the profession:—

TUFTS, Samuel Robert, of 182, Mount Kemble Avenue, Morristown, N.J., U.S.A. (Capt. late R.A.V.C.). Graduated Edinburgh, May 25th, 1893. Died August 31st, 1955, aged 84 years.

MR. S. R. TUFTS

In an obituary notice the *Journal of the American Veterinary Medical Association* writes:—

"Mr. Tufts, who had practised in Ireland before coming to this country, founded the Morristown veterinary hospital shortly after his arrival and operated it until his retirement in 1948 at which time his son, Fergus A. Tufts (graduated July, 1944, Dublin) assumed its management. Mr. Tufts is survived by his widow, three sons, five grandchildren and three great-grandchildren."

MR. WALTER CHARLES PRUDAMES

Mr. O. V. Gunning writes:—

By the death of Walter Prudames, after a long and wearying illness, the profession has lost a worthy and respected member belonging to the Victorian era.

Soon after obtaining his diploma, at the London College in 1896, he entered the Colonial Service, serving in the British Protectorate of Bechuanaland, being stationed at Daniels Kraal. His duties were connected with the control of an outbreak of rinderpest. It was a work which produced considerable opposition and was at times not without its personal dangers.

Returning to England in 1899, he spent a period gaining further experience, and about 1901 started practice at Leighton Buzzard where he remained until 1914.

At the outbreak of war, he was veterinary officer to the Bedfordshire Yeomanry and served the war years in France with the R.A.V.C. as a Captain in that Corps. The war over, he returned to his practice at Leighton Buzzard where he worked until 1929.

From 1929 until 1937 he was in charge of the Cooper Field Research Station at Little Gaddesdon, again returning there for the war years 1940-1945.

A conscientious and skilful practitioner, he retained a keen interest in all branches of his profession until sickness finally overcame him. A kindly, courteous and unassuming man, he will be greatly missed by his friends, who extend their sympathy to his wife and daughter.

COMING EVENTS

January, 1956

11th (Wed.). General Meeting of the Lancashire Division, B.V.A., at the Queen Hotel, City Road, Chester, 2.30 p.m.

19th (Thurs.). Ordinary General Meeting of the South-Eastern Division, B.V.A., at the Royal Star Hotel, Maidstone, 2.30 p.m.

24th (Tues.). Winter Meeting of the North of Scotland Division, B.V.A., in the Northern Hotel, Aberdeen, 2.30 p.m.

26th (Thurs.). Meeting of the Western Counties Division, B.V.A., at the Rougemont Hotel, Exeter, 2 p.m.

February

3rd (Fri.). Meeting of the Technical Development Committee, B.V.A., at 7, Mansfield Street, Portland Place, London, W.1, 10.30 a.m., to receive further articles on calf diseases.

10th (Fri.). Annual Ball of the Glasgow University Veterinary Medical Association in the Rhul Restaurant, Sauchihall Street.

17th (Fri.). Annual Ball of the Royal (Dick) School of Veterinary Studies in the Assembly Rooms, George Street, Edinburgh, 8.30 p.m.

22nd (Wed.). Second Meeting of the A.V.T. and R.W's. Scottish Regional Group for the 1955-56 session in the Moredun Institute, Edinburgh, 2.15 p.m.

B.V.A. COUNCIL AND COMMITTEE MEETINGS IN LONDON

Wednesday, January 18th, 1956

10.30 a.m.—Home Appointments Committee, at 7, Mansfield Street, W.1.

12.00 noon—Parliamentary and Public Relations Committee at 7, Mansfield Street, W.1.

2.15 p.m.—Organising Committee, at 7, Mansfield Street, W.1.

Thursday, January 19th, 1956.

10.00 a.m.—Veterinary State Medicine Committee, at 7, Mansfield Street, W.1.

12.00 noon—Finance Sub-committee, at 7, Mansfield Street, W.1.

2.15 p.m. General Purposes and Finance Committee, at 7, Mansfield Street, W.1.

Friday, January 20th 1956.

10.30 a.m.—Meeting of Council at Connaught Rooms, Great Queen Street, W.C.2.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Anglesey. Bodfan, Trevor, Holyhead (Dec. 23).

Ayr. Laigh Monkcastle Farm, Kilwinning (Dec. 28).

Derby. Fields Farm, Boylestone (Dec. 24).

Lancs. Botton Stubbs Farm, Ingleton, Carnforth (Dec. 27).

Northants. Brook Farm, Polebrook, Peterborough (Dec. 28).

Renfrew. Condrens Farm, Paisley (Dec. 24).

Stirling. Hill Head Farm, Gargunnock (Dec. 22).

Yorks. South Docker Bush Farm, Ripley, Harrogate (Dec. 23); Spring End Farm, Low Road, Richmond (Dec. 24); Village Farm, Hunton, Bedale (Dec. 28).

Atrophic Rhinitis

Pembroke. Park House, Tenby (Dec. 28).

Fowl Pest

Berks. Blogrove Farm, Blogrove Lane, Wokingham; 83, Evendors Lane, Wokingham (Dec. 28).

Carmarthen. Abersannal, Dryslwyn (Dec. 24); Bryngwyn, Salem, Llandilo (Dec. 26); Waumlasonem Horeb, Abergorlech Road, Carmarthen (Dec. 27).

Essex. Ashville, Church Road, Bulpham, Upminster (Dec. 23); 21, Straight Road, Boxted, Colchester (Dec. 26); 69, Langham Road, Boxted, Colchester; Bhal-Dudi, Little

Burstead, Billericay (Dec. 27); Barvills Farm, East Tilbury, Grays; Whiteholme Poultry Farm, Furze Lane, Stock, Ingatestone (Dec. 28).

Glamorgan. 14, Aeron Terrace, Merthyr Tydfil (Dec. 24).

Lancs. Leal Cottage, Dob Lane, Little Hoole, Preston (Dec. 28).

Leics. Upper House, Great Bowden, Market Harborough (Dec. 28).

Northants. Westfield Lodge, Finedon, Wellingborough (Dec. 24).

Salop. The Poplars, Hilltop, Madeley, Wellington (Dec. 24).

Staffs. Woodside Cottage, Wrottesley Park, Wolverhampton (Dec 27).

Suffolk. Slough House, Polstead Heath (Dec. 23).

Swine Fever

Ches. Gail Brook Farm, Crowley, Northwich (Dec. 27).

Devon. Stedcombe Farm, Axmouth, Seaton (Dec. 24).

Dorset. Louds, Mill Piggeries, Dorchester (Dec. 30).

Glamorgan. Walnut Tree Field, Aberavon, Port Talbot (Dec. 30).

Kent. Lodge Farm, Cobham, Gravesend; The Piggeries, Willow Walk, Crayford, Dartford (Dec. 27).

Lancs. Langley Road Piggeries, Salford (Dec. 27); Crime Bridge Farm, Woodhouses, Failsworth (Dec. 31).

Nottingham. Spital Farm, Blyth, Doncaster (Dec. 30).

Salop. Mayfield Farm, Arleston, Wellington (Dec. 30).

Somerset. 3, Rose Lane, Crewkerne (Dec 27).

Surrey. Kingsley Farm, Blackberry Lane, Lingfield (Dec. 30).

Warwicks. Oversley Hill Farm, Alcester (Dec. 31).

Yorks. Girlington Piggeries, Wallis Street, off Cemetery Road, Bradford (Dec. 24); Little Lane Allotments, Purston, Pontefract (Dec. 27); Manor Farm, Chapel Haddlesey, Selby (Dec. 28); 4, Riding Street, White Lee, Batley (Dec. 29).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Milk Yield from Sheep in Israel

Sir,—Readers interested in sheep breeding will be surprised to hear of achievements in milk yield of native sheep flocks in Israel. These were recently celebrated at the 20th anniversary of the champion herd.

When, 20 years ago, shepherds of the communal settlement Eju Havod bought an Arabic flock of 150 heads in the Beisau District of Palestine, they did not imagine that they would be able to improve this flock to such an extent that the average milk yield would rise from 100 litres per sheep to more than 400 litres (about 100 gallons), and thus take the first place in sheep milk production in the world.

This stupendous improvement was achieved by co-ordination of several factors as follows:—

Exact and continuous records of every sheep, its family and milk production; a change of natural to arranged breeding which enabled the testing of rams by comparing the milk records of their daughters with those of the mothers; improvement of pasture management and supplementary green fodder feeding during the arid seasons so that the sheep never lost form and weight; special preparation of ewes before the lambing season; systematic selection of ewes and rams with a view to milk yield; development of a milking technique which included preliminary massage; utmost care for the well-being of the sheep even in the smallest details, due to an extraordinary degree of devotion to their task by the responsible shepherds.

This flock was able to supply high quality rams to another 120 flocks and thus has had a tremendous influence on the development of the whole sheep-breeding industry of the country. During the last 15 years the milk production standard of ewes eligible for the breeding of rams was raised from 150 litres to 400 litres, and there are to-day seven ewes in Israel which yield more than 700 litres of milk per season.

The breeding progress of the well-organised sheep-breeders' organisation is supervised by the Director of the branch for sheep and goat breeding of the Ministry of Agriculture, Dr. Fiuci.

Due to systematic obligatory inoculation there is no more anthrax in Israel. Most herds are also inoculated against pulpy kidney disease with a locally prepared vaccine. The occurrence of udder gangrene after staphylococcal mastitis is usually prevented successfully by ordinary sanitary measures. There are to-day about 100,000 sheep in 300 herds in Israel.

The milk with a high butterfat content is used exclusively for high quality cheese production and gives the main income. Mutton prices are also high, though the wool of the native sheep is very coarse and has little value.

Yours faithfully,

H. AHARONI.

Hadera,
Israel.

December 18th, 1955.

" Braust,"
Weyhill,
Nr. Andover,
Hants.

December 3rd, 1955.

The Profession and the Press

Sir,—In their letter under this heading in THE VETERINARY RECORD of December 10th, Mr. Kirkwood and Mr. Meikle wonder whether the academic, Ministry and research branches of the profession are "interested." May I hasten to assure them that at least one colleague, in the latter field, is very concerned indeed, and that he heartily endorses their remarks. We belong to the same family, and share the same responsibilities, whatever the colour of our superficial spots.

Yours faithfully,

C. A. E. BRIGGS.

Highwoods Lodge,
Burghfield Common,
Berkshire.

December 22nd, 1955.

Sir,—This morning I read in a daily newspaper that a £300 engagement ring swallowed by a puppy was removed at an "Ilford animal hospital."

Is this hospital the P.D.S.A. establishment there? If so why was the owner not referred to a veterinary surgeon in private practice? Surely anyone who can afford to wear a £300 ring can hardly be considered a "poor person" and must be able to afford a fee for the services of the struggling private practitioner?

Yours faithfully,

G. MASON.

42, North Bar,
Banbury,
Oxon.

December 2nd, 1955.

[It is not quite clear whether the owner of the puppy was also the owner of the ring. If so, it is indeed to be deplored that a member of the profession was not consulted rather than a charitable organisation.—*Editor.*]

A New Disinfectant

Sir,—In my paper "Hibitane: A New Disinfectant for the Control of Mastitis," I made comparisons with hypochlorites and quaternary ammonium compounds giving the generally accepted properties of the latter. Different preparations vary widely however in their properties and we have had numerous requests for the names of the products actually used. They were Chloros and Cetavlon.

Yours faithfully,

C. D. WILSON.

Ministry of Agriculture and Fisheries,
Veterinary Laboratory,
New Haw,
Weybridge,
Surrey.

December 13th, 1955.

Reference

WILSON, C. D. (1955). *Vet. Rec.* **67.** 645

The Use of "Xylotox"

Sir,—I am writing this letter in the hope that colleagues elsewhere in the world may be moved to comment from experience on the following matter. Recently, on the advice of Tasmanian colleagues who had used it successfully, I injected into each spermatic cord of a yearling Shetland pony colt, before castration, 5 c.c. of the local anaesthetic "Xylotox." There was no evidence of pain and no struggling, and I was encouraged to think and to say, that at last we had found the perfect method of castration.

The owner was asked to observe the animal closely. He reported that it seemed unduly quiet during the following day but "picked around" and thus did not arouse his anxiety. The next morning—the third day including the day of operation—I passed the owner's farm and looked for the patient. It was lying newly dead beside a water trough at the far end of the paddock. Autopsy showed that the cause of death was haemorrhage into the abdominal cavity. Why?

The following alternative reasons presented themselves.

(1) The fatality might have been pure coincidence; but as I had been castrating, or assisting in the castration of, equines of all sorts and sizes since 1898 without observing a single death from internal haemorrhage after castration, this did not satisfy me.

(2) The left spermatic cord was very short, making it difficult to bring up the testicle before opening the scrotum. In so small a colt there would be an abnormal tendency for the short severed cord to be retracted into the abdomen and for clotting to be imperfect. But this is a fairly common experience, and had not hitherto caused a fatal result in my practice.

(3) Preoccupation with the anaesthetic aspect of the operation may have caused me to hold and compress the handles of the emasculator with less vigour or force than usual. When, as usually happens, the subject struggles at the moment of gripping the emasculator, or when one anticipates a struggle, a reflex tendency to grip tightly is established. In this instance, with no struggling or resistance at all, I may have failed to compress the artery sufficiently.

(4) The injection into the cord before incising the scrotum is necessarily blind, and part of the anaesthetic must sometimes be driven into the artery or its immediate vicinity. With a long-acting anaesthetic, like "Xylotox," could not this paralyse or hinder the contractility of the artery, thereby interfering with the normal mechanism whereby clotting occurs and the artery is sealed even though it is drawn back into the abdominal cavity?

The last alternative, perhaps in conjunction with some of the others, is what I fear happened. For that reason I cannot again use the method without convincing proof that such a danger does not exist.

This is a pity, because throughout my professional life I have been looking for a really safe and practicable way of preventing pain in animal castration.

With adequate help, and in suitable circumstances, one could use "Xylotox" without fear of fatal haemorrhage by ligaturing the spermatic artery, but here again I am uneasy because I once caused schirrous cord in a colt of my own by ligaturing the spermatic artery. I had the same result in experimental ligature of the spermatic artery in an army horse.

Under rough conditions and with sparse and inefficient help it would not be easy in some cases to ligature the artery. It would mean delay and fiddling about which should be avoided in the field. Thus it will be seen that there are several points on which the practitioner needs reassurance before trying "Xylotox" again. I should be grateful, not just for my own sake, but for humanitarian reasons, if colleagues would offer suggestions from their own experience.

Yours faithfully,

J. W. RAINEY.

Westbury,
Tasmania.
October 12th, 1955.

A Case of Osteodystrophia Fibrosa

Sir,—A condition frequently encountered by veterinary surgeons in this part of the world is that of osteodystrophia fibrosa. I record this case in the hope that some members, who may have come across the condition, may enter the discussion.

The subject was a three-year-old brown gelding. This horse did normal training gallops on the morning of December 14th, and apparently moved freely. The groom reported that on walking back to its stall it showed signs of posterior inco-ordination. Shortly after reaching its stall it collapsed and thereafter remained recumbent until its death two days later.

I first saw the horse at 7.30 a.m. on the 14th. Temperature was normal throughout the condition; pulse soft and intermittent. Mucous membranes were normal at first, later injected. There was complete posterior sensory and motor paralysis, spasmodic twitching of groups of cutaneous muscles, facial muscles, and fore limbs; later stasis of the bowel and bladder. As the condition grew, a common attitude adopted by the horse was that of the " dog sitting " position and pivoting from the lumbar sacral region, collapsing after each effort to rise. Slight softening of the frontal bones was indicated on percussion and exploration.

A tentative diagnosis of osteodystrophia fibrosa was made, and prognosis was guarded. Symptomatic treatment was carried out with no avail and the horse subsequently died at 10.30 a.m. on December 16th.

At *post mortem* the brain and meninges were removed and showed no signs of inflammation. The frontal bones were thin in cross-section and porous in nature indicating a degree of osteodystrophia fibrosa. Haemorrhages into sub-lumbar muscles. The spinal column in the lumbo-sacral region was exposed. The interspinous ligament between the sixth lumbar and first sacral was partially ruptured. There was considerable movement in the articulation on manipulation. The articular surfaces of the transverse processes of the sixth lumbar and the alae of the sacrum were pitted and showed signs of chronic arthritis. An osteophyte on the right lumbar articulation extended into the notch. The nerves of the lumbo-sacral plexus showed signs of trauma and there were signs of haemorrhages in the epineurium and apparently between the nerve fibre bundles. Microscopic examination of frontal and iliac bones showed a degree of thinness and softening.

This condition is of great concern to both practitioner and client, not only in losing the patient, but also in the fact that insurance companies only pay 50 per cent. on horses dying of this condition.

I wish to express my appreciation to Mr. W. E. Lancaster, M.R.C.V.S., Director of Veterinary Services, Federation of Malaya, his associates, and the I.M.A. for their co-operation in this case.

Yours faithfully,

JAMES H. MARSH.

Assistant Veterinary Surgeon to The Straits Racing Association.

Singapore.

October 11th, 1955.

Some of our readers may well feel that the case described above would have read more convincingly as one of osteodystrophia fibrosa if further evidence had been given of the microscopic findings in the bones examined. It would seem at least that the case was complicated by lumbo-sacral trauma with partial paraplegia. These complications are not necessarily characteristic of osteodystrophia fibrosa.—*Editor.*

A Request from Canada

Sir,—I am interested in receiving from all parts of the world strains of *Pasteurella multocida* or *septica* for serological typing. From this survey, which was initiated several months ago, it is hoped to determine what are the predominant serological types in the important domesticated animal species. As much information as is available should be submitted with each strain. A report giving details of the serological findings will be sent to each contributor.

Yours faithfully,

G. R. CARTER.

Ontario Veterinary College,
Guelph,
Ontario,
Canada.

December 30th, 1955.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN
Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
16th to 30th November, 1955		34	—	1	110	—	57
Corresponding period in	1954	23	—	—	58	—	42
	1953	24	—	1	37	—	69
	1952	90	—	—	24	—	24
1st January to 30th November, 1955		721	6	7	624	—	1,331
Corresponding period in	1954	303	4	12	717	—	1,336
	1953	569	—	35	862	—	2,578
	1952	1,051	—	495	230	1	788

TUBERCULOSIS (ATTESTED HERDS) SCHEMES

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at 30th November, 1955, was as follows :—

England	Wales	Scotland	Total (Great Britain)
80,586	33,755	36,011	150,352